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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

RAMDHANIE, BOBBY

ART UNIT

PAPER NUMBER

1797

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10/15/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/769,220	<b>Applicant(s)</b> FEYGIN, ILYA	
	<b>Examiner</b> BOBBY RAMDHANIE	<b>Art Unit</b> 1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 14 July 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Response to Amendment***

1. Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.

### ***Response to Arguments***

2. Applicant's arguments, see Remarks, filed 07/14/08, with respect to the rejection(s) of claim(s) 1-7, 9, & 11-15 under 103 have been fully considered and are persuasive. Therefore, the rejections have been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Kuebler et al (US6519032).

3. Applicant's arguments filed 07/14/2008 in regards to Claims 8 & 10 have been fully considered, but they are not persuasive. The following reasons are why:

4. Claims 8 & 10 are toward a method.

5. Regarding Claim 8, Raskas discloses the method comprising: A). Physically engaging a chemical entity to a first end of an IR-transmitting fiber (See Abstract – interacting with substance within a sample); B). Bringing said chemical entity in contact with a binding compound (See Column 4 lines 48-50 & 61-64 & See Column 5 lines 5-17); and C). Conducting a thermal signal resulting from a binding interaction to a thermal sensor through said IR-transmitting fiber (See Column 5 lines 5-17; binding interaction between biologically active substances inherently give off thermal radiation), wherein said binding interaction occurs between said chemical entity and said binding

Art Unit: 1797

compound (Abstract). Examiner takes the position that the change in wavelength defines a thermal signal.

6. For Claim 10, Raskas discloses the method of claim 8 wherein engaging a chemical entity further comprises inserting said first end of said IR-transmitting fiber into a sample carrier (Abstract & Figure 3 Item 85). Examiner takes the position that both a person and a beaker may define sample carriers.

7. The optical fiber disclose by Raskas is capable of transmitting infrared energy. Applicants state on the record that this optical fiber is a standard optical fiber (See Appeal Brief - Page 12 lines 4-6). Standard optical fibers are capable of transmitting in that region of the electromagnetic spectrum. To supply evidence for this statement, the Examiner relies on the following reference: "A Brief History of Fiber Optic Technology." The source for this information was publicly made available before the date of the provisional application by the applicant in the instant case (See year date: 2002).

8. In this article, which discusses the development of the standard optical fiber, Figure 3 best discloses the wavelengths in which "standard optical fibers" are capable of transmitting. As can be seen in Figure 3, "standard optical fibers" transmit within the range of 0.7-1.9  $\mu\text{m}$  (700-1900 nm) – which corresponds well within the range which thermal energy absorbs, is transmitted, and detected. The alleged claim that a "standard optical fiber" is not capable of transmitting within this range is improper.

9. Applicant further states on the record that "standard optical fiber" could transmit in this region – See Page 12 lines 4-6. Applicant further states that these "standard optical fibers" are not suitable for use in conjunction with the applicant's invention

Art Unit: 1797

because only a small amount of infrared radiation is propagated through the fiber. This is not persuasive because according to the above article, "standard optical fibers" can propagate infrared radiation (1310 nm & 1550 nm are well within the range of infrared radiation) with an optical loss of only 0.5 - 0.2 dB/km - that is per kilometer of length of the fiber optic. This means that if a "standard optical fiber" was used within an approximate length suitable for the applicants claimed invention, there would be very little if any loss of the optical signal.

10. Applicants' allege that the optical fiber in Raskas is not an "IR-transmitting fiber (Please see rejections above)." Applicants further argue that Raskas would not have any reason to use such a fiber. The Examiner respectfully disagrees. It would be an inherent property of the standard optical fiber since this is a standard used for most equipment such as military devices, computers, networks, and transmission lines.

11. Applicants further argue that Raskas does not disclose "binding interactions." This is not found persuasive because the tip is coated with a material that binds molecules or compounds – biological materials interact with molecules or compounds in a binding manner. Further, the Examiner takes the position that "interacting" is a binding interaction.

### ***Response to Amendment***

#### ***Claim Rejections - 35 USC § 102***

12. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

Art Unit: 1797

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

13. Claims 1, 3-10, & 12-15 are rejected under 35 U.S.C. 102(e) as being anticipated by Kuebler et al (US6519032).

14. Applicant's claims are toward an apparatus and a method.

15. Regarding Claims 1, 3-10, & 12-15, Kuebler et al discloses the apparatus comprising: A). A plurality of optical fibers (See Figure 2, Items 440 – 425, 425', 425" & 450 – 430, 430' 430"), wherein: 1). Said optical fibers each having a first end and a second end ( (this is inherent to the optical fibers); 2). Said fibers are capable of transmitting infrared radiation ("IR") (See Column 16 lines 1-7, Column 17 lines 1-7, Column 20 lines 29-40 – emphasis on "Raman", "IR," "infrared," and wavelength range from 700 – 2000 nm); a sensor for sensing IR (See Column 15 lines 33-38; photodiode, Column 16 lines 12; photodetector & Column 16 lines 15-16, photo-detection system) 3). Said sensor is in IR-sensing contact with said first end of each of said optical fibers (the optical fibers are in IR-sensing contact); B). A separator, wherein said separator engages said plurality of fibers and is suitable for spatially separating said optical fibers from one another in a pattern that enables said optical fibers to physically engage individual samples on a sample plate (See Column 17 lines 50-64; probe head. Applicant' argues functional language for the component in their arguments. The probe head is capable of performing the functions as defined by the applicant).

Art Unit: 1797

16. Additional Disclosures Included: Claim 3: Wherein said second end of said optical fibers are physically adapted to receive a first chemical entity (See Figure 2; A liquid is a chemical entity - note optical fibers are held by the separator ("physically adapted") to be directly in contact with the chemical entity); Claim 4: Wherein said individual samples comprise said first chemical entity (See Column 6 lines 41-50); Claim 5: the apparatus of Claim 1 further comprising a surface having a binding compound disposed thereon (See Column 19, line 49 to Column 20 line 19; & Column 2 lines 24-28 & Column 6 lines 41-50); Claim 6: Wherein said first end of said optical fibers are physically coupled to said sensor (See Column 15 lines 33-38; photodiode, Column 16 lines 12; photodetector & Column 16 lines 15-16, photo-detection system); Claim 7: Wherein said separator is engaged to said plurality of fibers such that it can slide along said plurality of fibers (See Column 18 lines 2-34); Claim 8: A method comprising: A). Physically engaging a chemical entity to a first end of an IR-transmitting fiber (See Figure 2 – note optical fibers are physically engaging the chemical entity – the liquid as well as physically engaging suspensions, emulsions, dispersions, and solutions of inorganic and biological macromolecules or polymers and/or non-biological polymers Abstract – interacting with substance within a sample & Column 6 lines 43-50); B). Bringing said chemical entity in contact with a binding compound (See Column 6 lines 12-16 both polymerization and catalyst synthesis requires bringing a binding compound in contact with a chemical entity); and C). Conducting a thermal signal resulting from a binding interaction to a thermal sensor through said IR-transmitting fiber (See Column 6 lines 12-16; this is an inherent property of the reactions and the apparatus of Kuebler et

Art Unit: 1797

al), wherein said binding interaction occurs between said chemical entity and said binding compound; Claim 9: The method of claim 8 further comprising sliding a separator along said IR-transmitting fiber (See Column 17 line 49 to Column 18 line 34; as defined the probe head functions as the separator); Claim 10: Wherein engaging a chemical entity further comprises inserting said first end of said IR-transmitting fiber into a sample carrier (See Figure 2 – note Items 431, 421, and 202). Claim 12: A method comprising: A). Positioning a movable separator along a plurality of IR-transmitting fibers to obtain a desired spacing between adjacent IR-transmitting fibers at a sampling end thereof (See Column 17 line 49 to Column 18 line 34); and conducting a thermal signal through at least one of said IR-transmitting fibers (See Column 6 lines 56-62); Claim 13: The method of claim 12 further comprising engaging a chemical entity to said one sampling end of said IR-transmitting fibers (See Figure 2 Items 421 Item 202); Claim 14: The method of claim 13 further comprising bringing said chemical entity into contact with a binding compound (See Column 6 lines 12-16); Claim 15: Wherein conducting a thermal signal further comprises conducting said thermal signal to a thermal sensor (See Column 6 lines 51-62; all of these techniques inherent perform this method).

17. Claims 8 & 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Raskas.

18. Claims 8 & 10 are toward a method.



Art Unit: 1797

19. Regarding Claim 8, Raskas teaches a method comprising: A). Physically engaging a chemical entity to a first end of an IR-transmitting fiber (See Abstract – interacting with substance within a sample); B). Bringing said chemical entity in contact with a binding compound (See Column 4 lines 48-50 & 61-64 & See Column 5 lines 5-17); and C). Conducting a thermal signal resulting from a binding interaction to a thermal sensor through said IR-transmitting fiber (See Column 5 lines 5-17; binding interaction between biologically active substances inherently give off thermal radiation), wherein said binding interaction occurs between said chemical entity and said binding compound (Abstract). Examiner takes the position that the change in wavelength defines a thermal signal.

20. For Claim 10, Raskas teaches the method of claim 8 wherein engaging a chemical entity further comprises inserting said first end of said IR-transmitting fiber into a sample carrier (Abstract & Figure 3 Item 85). Examiner takes the position that both a person and a beaker may define sample carriers.

### ***Claim Rejections - 35 USC § 103***

21. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 1797

22. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining

obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

23. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kuebler et al.

24. Applicant's claim is toward an apparatus.

25. Regarding Claim 2, Kuebler et al discloses the apparatus of Claim 1, except for a collar for bundling said optical fibers. Kuebler et al does disclose that the fiber optic arrays may include up to 1920 optical fibers (See Column 18 lines 42-50). It would have been clearly obvious to one of ordinary skill in the art at the time the invention was made to use a collar or other means to keep all of these optical fibers together to prevent the optical fibers from breaking, kinking, or other random movements that would prevent propagation of the "IR" radiation through the optical fiber.

26. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kuebler et al.

27. Applicant's claim is toward a method.

28. Regarding Claim 11, Kuebler et al discloses the method of Claim 8 except wherein bringing said chemical entity in contact with a binding compound further comprises inserting said first end of said IR-transmitting fiber into a well after engaging

Art Unit: 1797

said chemical entity. Kuebler et al does however disclose that the method does include bringing said chemical entity in contact with a binding compound that are performed in wells of microtiter plates, vials, and containers (where polymerization and catalysis reactions are performed). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Kuebler et al and insert the first end of said IR-transmitting fiber into the well after engaging said chemical entity because Kuebler et al discloses the addition of initiators, catalysts, and other additives (See Page 38 lines 37-42), to the reaction which may take time for the products under observation to form.

#### ***Telephonic Inquires***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to BOBBY RAMDHANIE whose telephone number is (571)270-3240. The examiner can normally be reached on Mon-Fri 8-5 (Alt Fri off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Walter Griffin can be reached on 571-272-1447. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1797

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Bobby Ramdhanie, Ph.D./  
Examiner, Art Unit 1797  
/B. R./

/Walter D. Griffin/  
Supervisory Patent Examiner, Art Unit 1797